

Advanced Technology & Materials Co., Ltd.
Rare Earth Permanent Magnet & Products Branch

安泰科技股份有限公司
稀土永磁及制品分公司

Name in brief: AT&M

Code of stock: 000969

[Http://www.atmcn.com](http://www.atmcn.com)

<https://www.antai-emarketing.com/>

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01

PART ONE

AT&M group Company profile
安泰科技股份有限公司



BRIEF

Central Iron & Steel Research
Institute /CISRI

35.5% holding

Advanced Technology & Materials Co., Ltd.
/AT&M (Listed company)

100% holding

Functional materials division
(Nd-Magnets Factory)



CISRI Brief

- ◆ Founded in 1952
- ◆ Merger with Automation Research and Design Institute of Metallurgical Industry in 2006----CISRI GROUP
- ◆ The largest metallurgy industry R&D institutions in China
- ◆ National R&D base for metal materials
- ◆ 8300 employees including 12 Academicians of CAE and CAS, CHINA



李文采 (1906.10-2000.3)



邵象华 (1912.2-2012.3)



中国科学院院士 王崇文



中国工程院院士 殷瑞钰



中国科学院院士 朱静



中国科学院院士 蔡其凡



中国工程院院士 千勇



中国工程院院士 翁宇庆



中国工程院院士 王海舟



中国工程院院士 李卫



中国工程院院士 刘正东

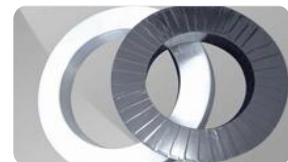
MAIN PRODUCTS of AT&M



NdFeB Magnet
稀土永磁材料



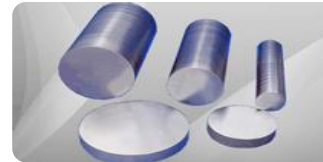
Precision Alloy
精密合金



Nanocrystalline
纳米晶制品



Amorphous
非晶材料



High-speed steel
高速工模具钢



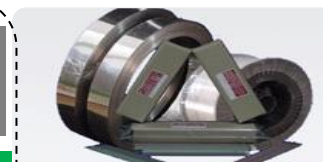
Refractory material
难熔材料

Advanced Functional Material and Parts

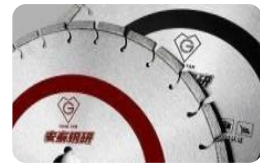
High Speed Steel & Welding Materials

Powder Metallurgy Material and Products

Energy Saving and High Tech Service



Welding material
焊接材料



Diamond Slicer
金刚石工具



MIM
注射成型制品



HIP Products
热等静压制品



Atomized Alloy Powders
雾化合金粉末



Environmental Engineering
环境工程

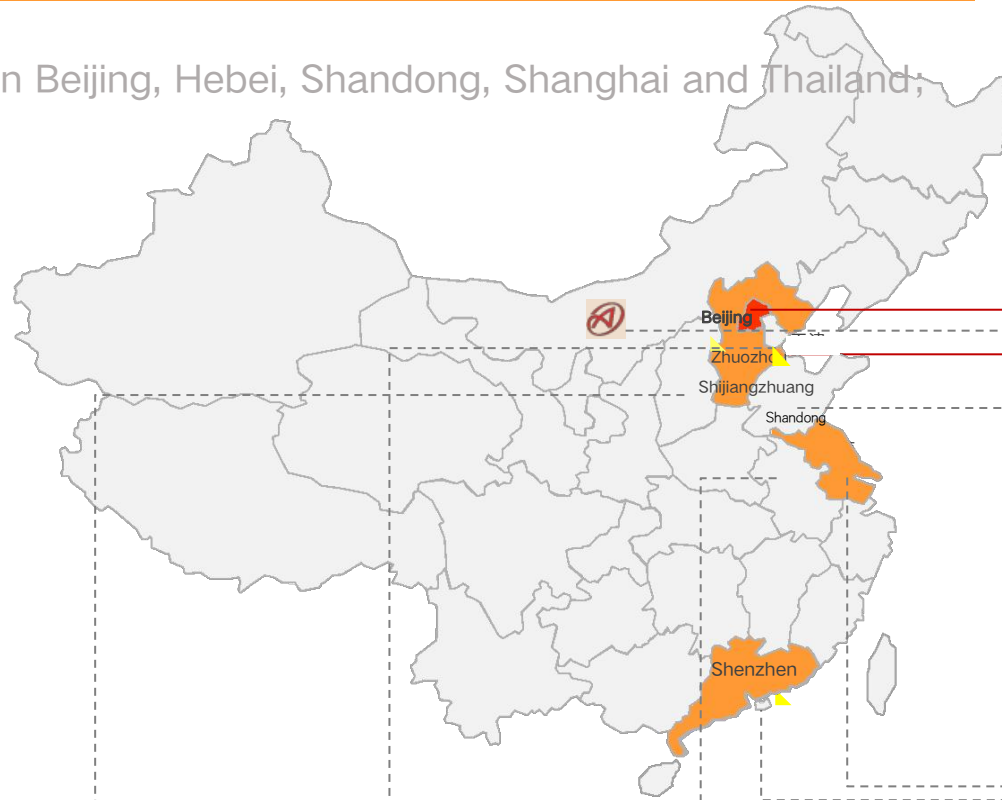
AT&M group Brief

- ◆ Founded in 1998 ; CISRI holds 35.5%
- ◆ A Share Listed Company, IPO on Shenzhen Stock Exchange in 2000
- ◆ Registered Capital : 1.026Billion RMB
- ◆ Code of stock: 000969
- ◆ 6,414Employees
- ◆ In the next five years, the company will focus on the development of advanced functional materials represented by rare earth permanent magnet materials and high-end powder metallurgy materials represented by tungsten and molybdenum refractory materials.

Our products have been widely used in areas such as information technology (IT), energy consumption and new energy vehicles, power engineering, and environmental protection .


PRODUCTION FACILITIES & SUBSIDIARIES

◆ In Beijing, Hebei, Shandong, Shanghai and Thailand,





- **Konggang, Beijing**
- Area: 124000.0 m²
- RE Permanent Magnets/Precision Alloy


R&D industrialization of sintered magnet



- **Changping, Beijing**
- Area: 105000.0 m²
- Diamond Tools



- **Yongfeng, Beijing**
- Area: 146256.5 m²
- PM/Nanocrystalline/Refractory Materials



- **Zhuozhou, Hebei**
- Area: 120000 m²
- Amorphous / HIP



- **Zibo, Shandong**
- AT&M Magco Technology
- Area: 80000m²
- RE Permanent magnets

Industrialization of sintered magnet



- **Baotou, Inner Mongolia**
- AT&M North Technology
- Area: 35000m²
- RE Permanent magnets

Industrialization of sintered magnet



He Ye Special Steel Co., Ltd.
—Shijiazhuang
Tools, high speed steel



Sainteagle Welding
—Tianjin
Welding materials



AT&M MIK
—Kunshan
MIM



AT&M Highmag Metal
—Shenzhen
Bonded magnet

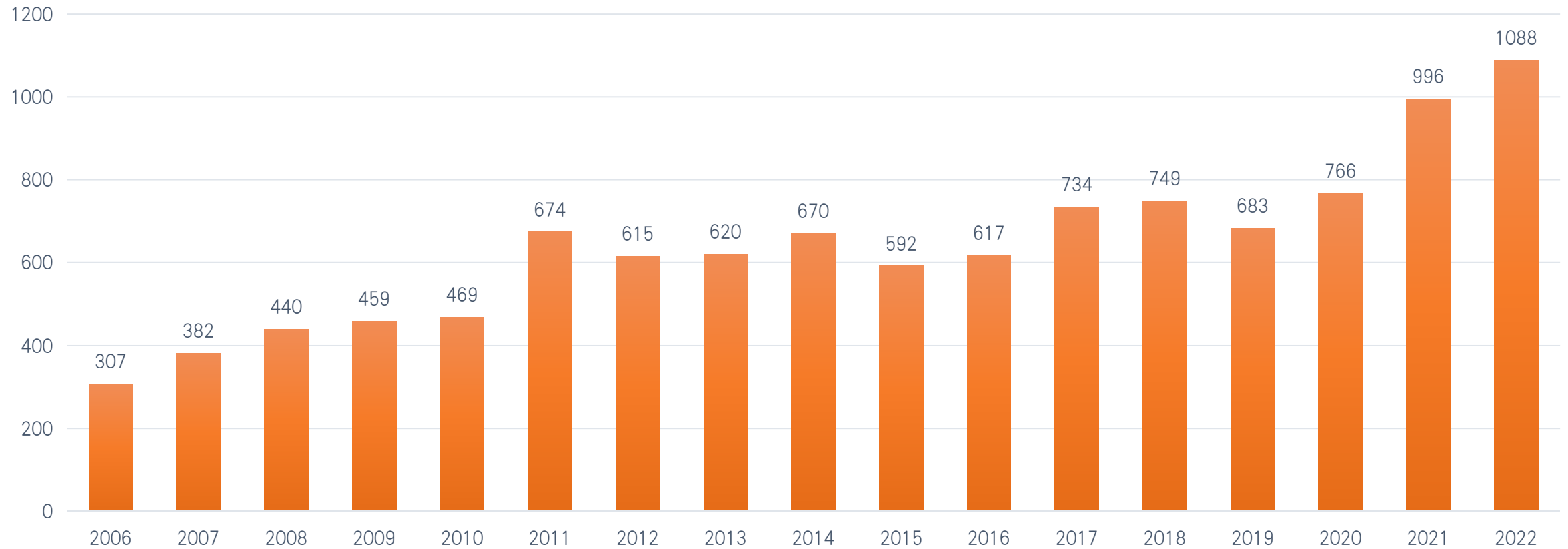
Industrialization of bonded magnet



Antai Zhigao Amorphous
--Shanghai
Amorphous Metal

Turnover

AT&M Group (million USD)



02

PART TWO

Sintered Neodymium Magnet Profile

稀土永磁板块业务介绍



Neo-MAGNETS BRIEF



Industrialization of sintered NdFeB magnet base (Beijing、Shandong、Baotou)



- ◆ **Beijing factory**
Investment: 300 Million RMB
Area: 124000 m²
Employees: 520-550 people
Capacity: 3500 tons/annual
2022's Sales: 215M \$ USD



- ◆ **Shandong factory**
Investment: 400 Million RMB
Area: 80000 m²
Employees: 280-350 people
Capacity: 3000 tons/annual
2022's Sales: 83M \$ USD



- ◆ **Baotou factory**
Investment: 200 Million RMB
Area: 36000 m²
Employees: 100-120 people
Capacity: 2000 tons/annual
2022's Sales: 53M \$ USD

Beijing factory beief

- ◆ Investment : 300 Million RMB (2003-2018)
- ◆ Grade: N56,52H,50SH,45UH,40EH,50UH-D,45EH-D
- ◆ ISO9001: Since 2001
- ◆ ISO14001 / OHSAS18001: Since 2004
- ◆ TS16949 : Since 2007 ---> IATF in 2018
- ◆ Merger with Magco Technology Co.,Ltd. in 2019
- ◆ Merger with North RE Technology Co.,Ltd. in 2021

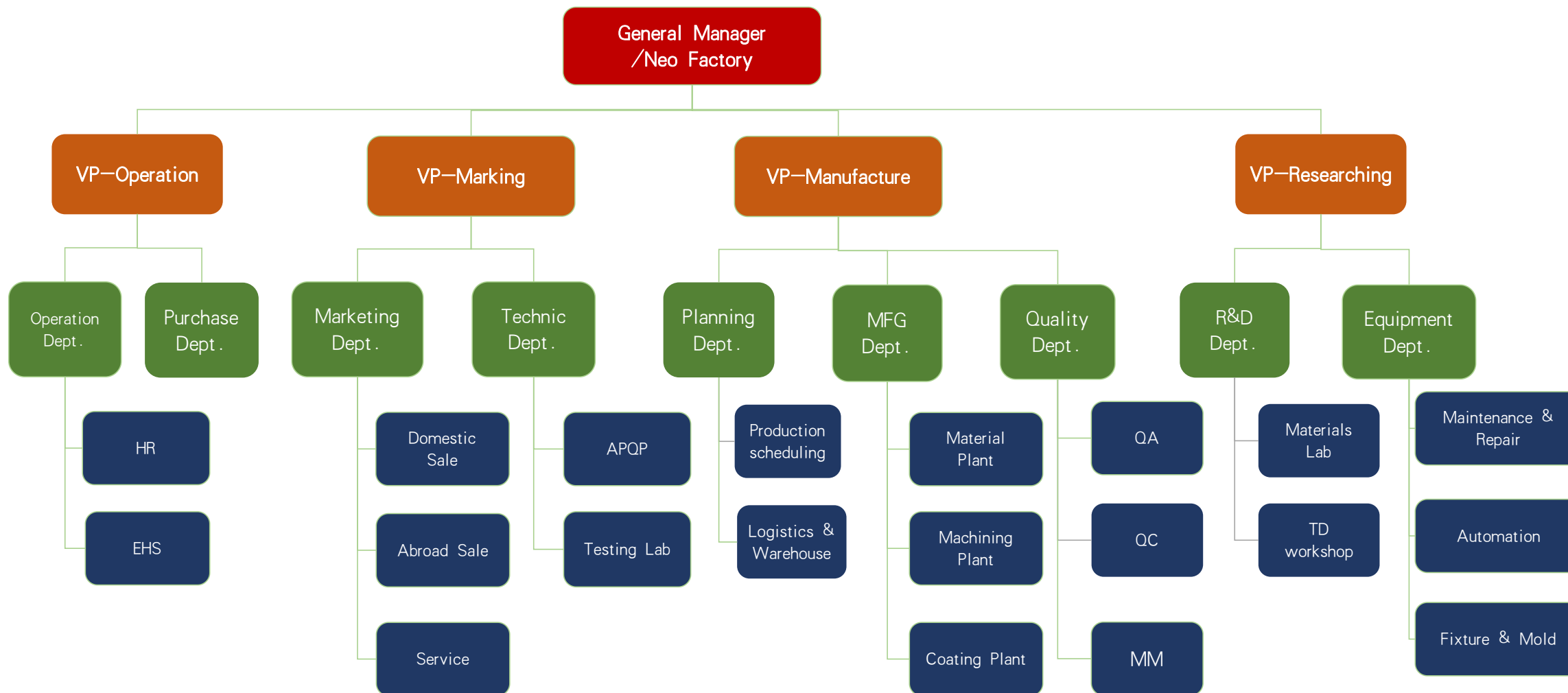
NdFeB License

- ◆ License from Hitachi Metal since 2003/2013

NdFeB Capacity

- ◆ Currently: 3,500t (Beijing) / 3,000t (Shandong) / 2,000t (Baotou)
- ◆ Capacity Planning : > 20,000 tons /2025 (including Beijing, Shandong and Baotou.

Organizational structure



Sintered Nd-Fe-B Development History

In 1990

1. In 1983, sintered Nd-Fe-B Magnets was invented;
2. In 1984, CISRI Made Magnet with 35MG0e, the winner of science and technology second award in metallurgy ministry;
3. In 1989, CISRI Made Magnet with 49.6MG0e, the winner of national science and technology progress first award;
4. In 1990, $H_{cj}+BH_{max} \geq 50$ mass production;

In 2000

1. In 1998, AT&M began industrial production of sintered Ndfeb magnets;
2. In 1999, the winner of national science and technology progress second award again ;
3. In 2000, $H_{cj}+BH_{max} \geq 55$ mass production ;

In 2010

1. In 2003, the 1st 1,500 tons AT&M production line was build ;
2. In 2008, the winner of national science and technology progress second award again ;
3. In 2011, the capacity of block of AT&M was increased to 2500 tons;

In 2015

1. In 2011, Magco was build ;
2. In 2014, the winner of national science and technology progress second award again ;
3. In 2015, AT&M Magco was approved as "Zibo Municipal Technology Center" and "Shandong High-tech Enterprise"
4. In 2015, The capacity of block of AT&M was increased to 3500 tons;

In 2020

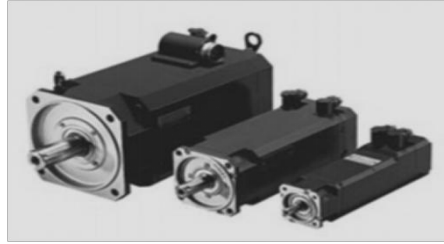
1. In 2019, the 2000 tons project of AT&M Magco won the second prize of Shandong Science and Technology Project.
2. On December 16, 2019, AT&M Magco was established.
3. In 2020, AT&M Magco approved "Zibo city - level gazelle enterprise"
4. In 2020, AT&M awarded national green factory.

In 2021

1. In 2021, AT&M awarded national green factory ;
2. In 2021, CISRI was selected as the benchmark project of "Rare earth Permanent magnet Intelligent Manufacturing Information Management Project" by SASAC.
3. In November 2021, AT&M BeiFang was established;

Future
> 30000T

Application



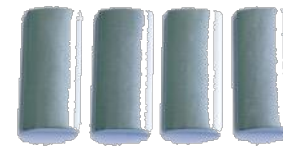
**Industrial
Motor**

**Consumer
electronics**



Robot

**Inverter
aircon**



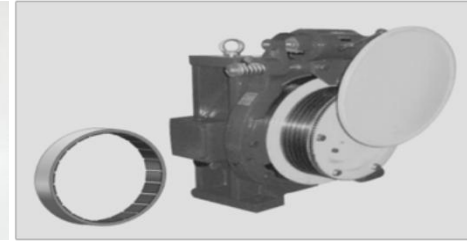
EPS

**Automotive
drive
motor**



**Wind power
generator**

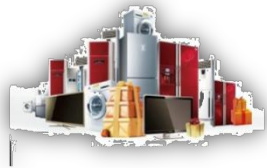
**Elevator
motor**



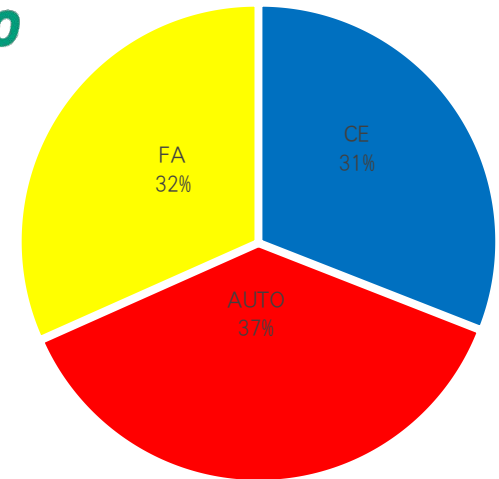
Customers



上海电驱动

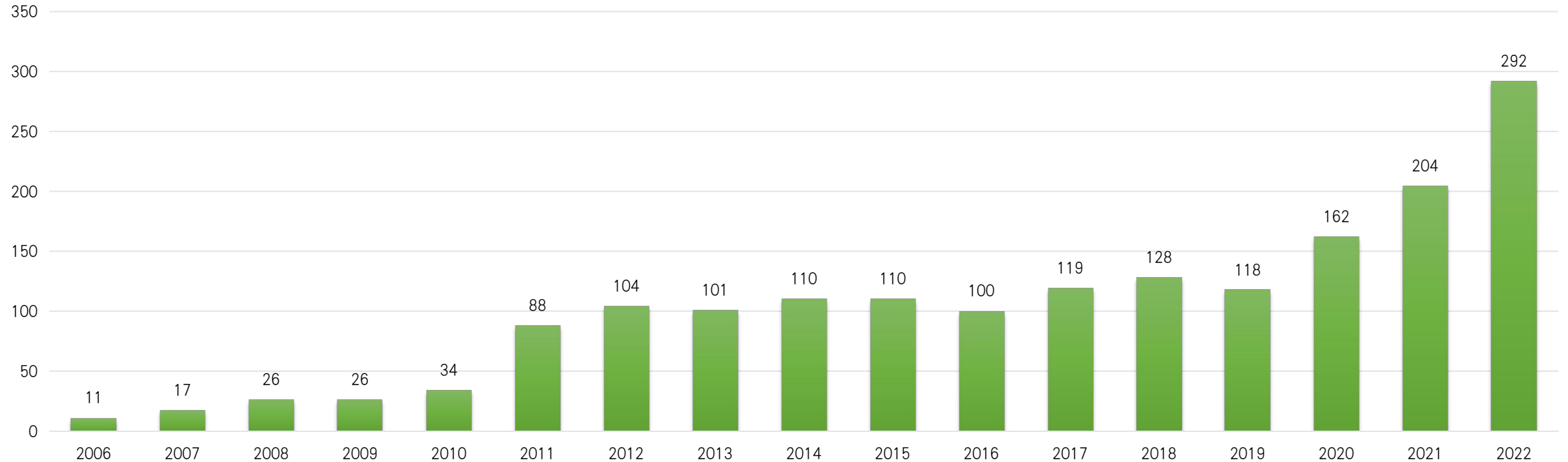


Sales distribution in 2022

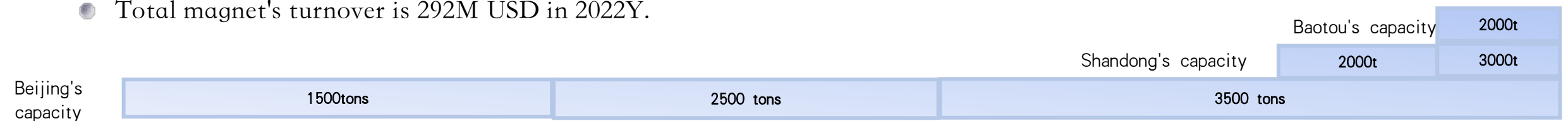


Turnover

AT&M Magnet (million USD)

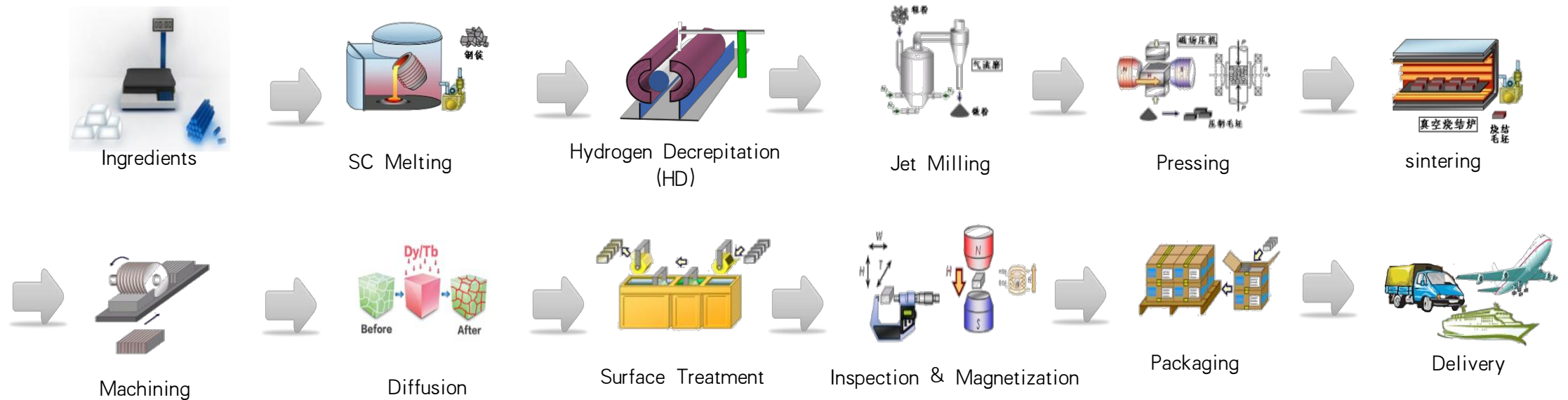


Total magnet's turnover is 292M USD in 2022Y.



Advantage 1: Full Process Automation Production Line

AT&M has a full-process NdFeB production line from ingredients process to delivery process ; The automation rate of the key processes in the whole process is more than 90%, which improve product delivery and product quality effectively.

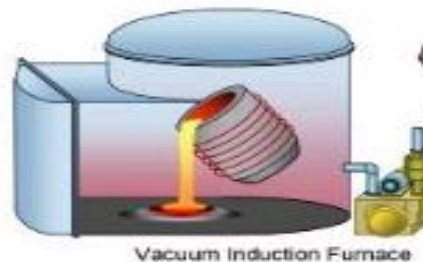
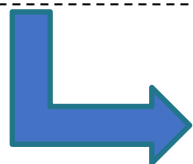


Manufacture process①

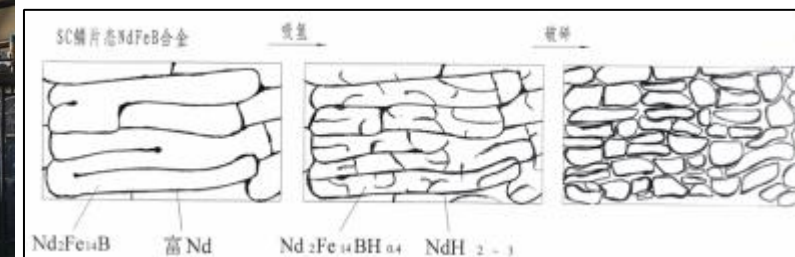
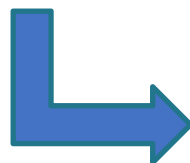
Raw materials



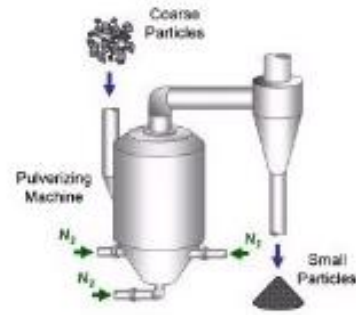
Strip Casting (SC)



Hydrogen decrepitation (HD)

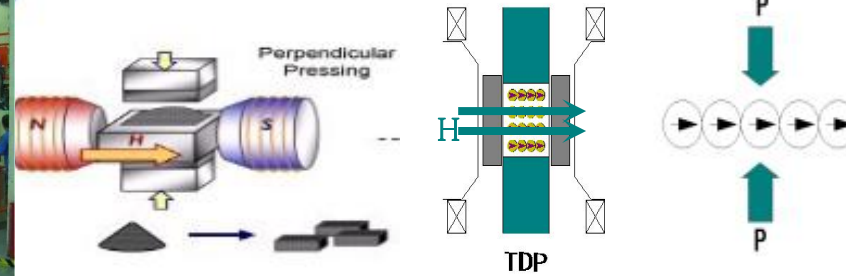


Jet milling



Manufacture process ②

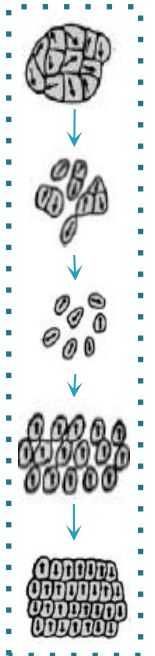
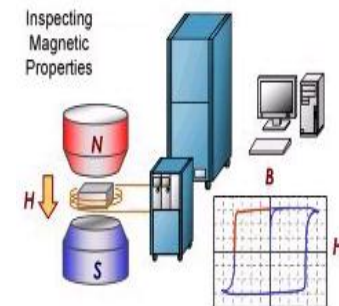
pressing



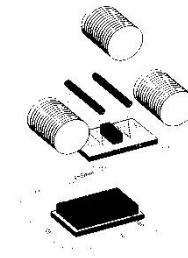
Sintering and aging



BH curve



Machining

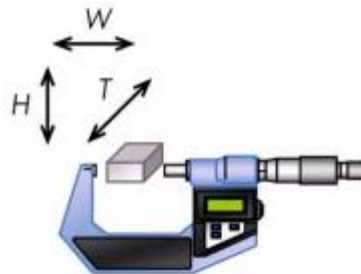


Manufacture process ③

Surface Treatment



Appearance & Dimensions inspection



Packaging



delivery

Beijing factory equipment



Shandong factory equipment



Advantage 2: Meet the Surface Treatment Ability of Various Products



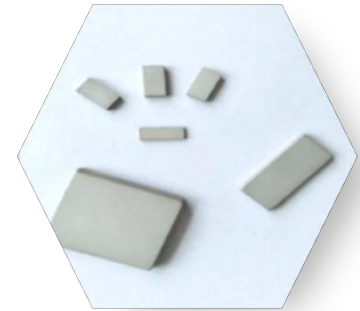
● P-Coating

● Thickness <math>< 3 \mu\text{m}</math>



● Blue white zinc/
color zinc

● Thickness :
4~10 μm
● SST: 48H

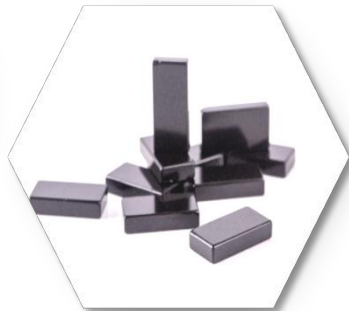


● Al

● Thickness :
4~10 μm
● SST: 48H
● PCT: 240H

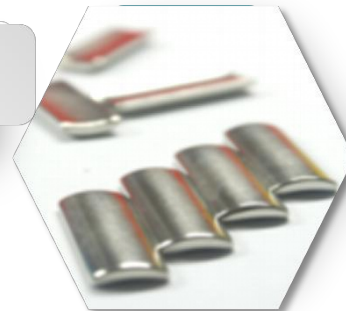
● Epoxy / Cu+E
ZINC+E / Al+E

● Thickness :
15~40 μm
● SST: 240~480H
● PCT: 96~480H

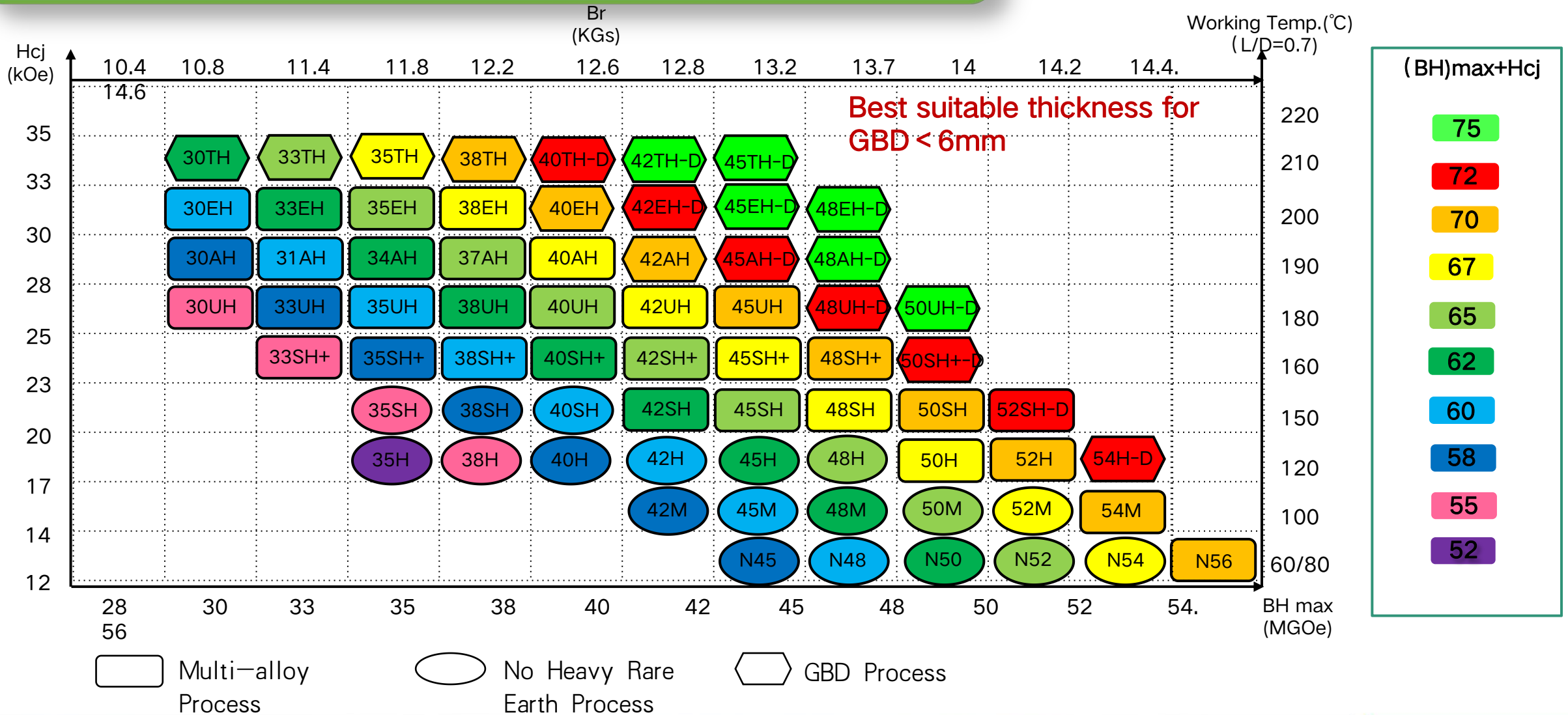


● NiCuNi / CuNi
Chemical Ni

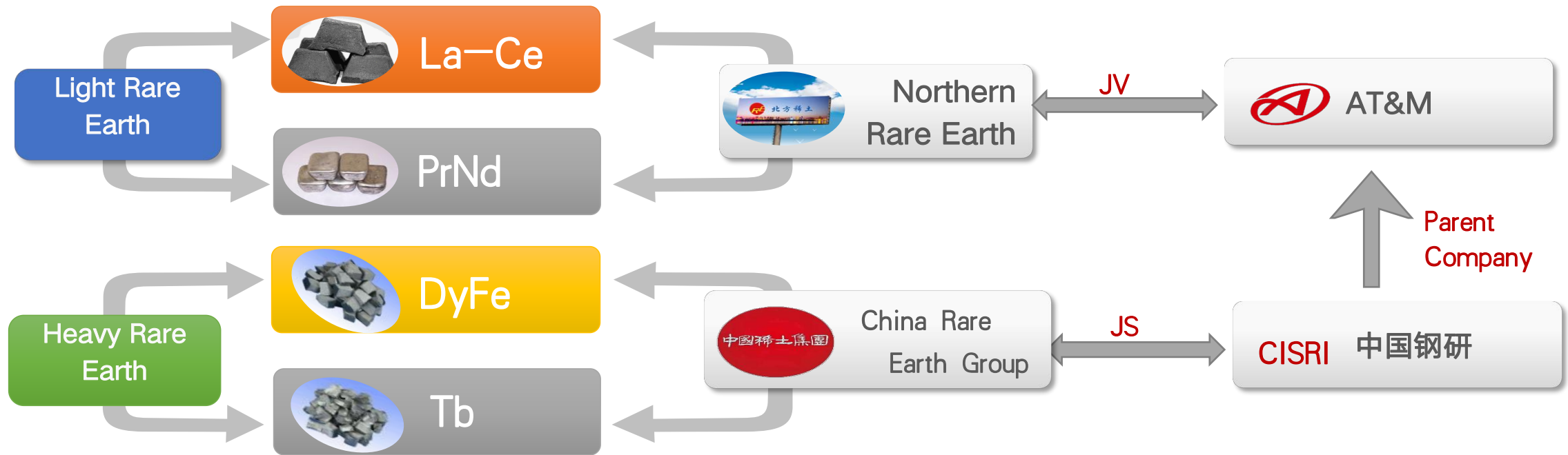
● Thickness :
5~30 μm
● SST: 72~96H
● PCT: 48H



Advantage 3: Low Cost, High Performance Technology Process

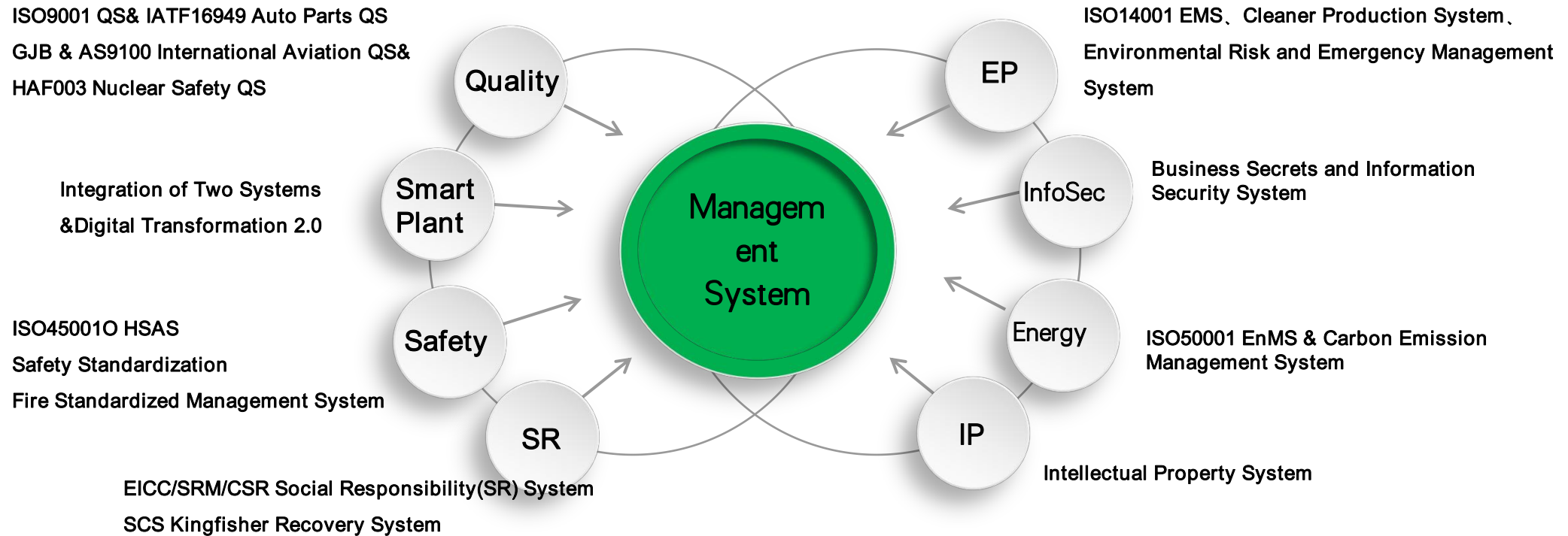


Advantage 4 : Adequate raw material supply and guarantee ability



- AT&M has 3 sintered magnet base and 1 bonded magnet base;
- AT&M has strategic cooperation with the North rare earth group(Baotou Steel), the largest rare earth mine in China, which provides a sufficient guarantee for the supply of rare earth raw materials.

Advantage 5 : Perfect Management System



The company constantly improve the system construction, to provide high-quality products for customers to consolidate the foundation.

Advantage 6 : ES & Emission Reduction Green Factory



Circulating Water Sys

Effectively ensure the cooling of equipment and provide heating for the whole factory, saving **150,000** kWh of electricity in one heating season.



Fully Auto-sewage Treatment Sys

Through automatic debugging and addition of control parameters program, the influence of human factors is eliminated, and the discharge of water body up to standard is more effectively guaranteed.



2MW Distributed Photovoltaic Power Generation

Annual power generation of more than 2 million kWh, accounting for **15%—20%** of the total electricity consumption.



Gas Discharge Sys

Professional waste gas treatment tower treatment and online monitoring, to ensure that the gas emission standards.



Ground-source Heat Pump System

The whole factory **20,000 m2** building cooling.



Rare Earth Recycling

The waste from the whole process is recycled and reused in a variety of ways. In 2022, AT&M passed **RECYCLED CONTENT CERTIFICATION**, certified by SGS.

Beijing factory was rated as national green factory; Shandong factory was rated as municipal green factory;

Advantage 7 : Perfect Inspection & Analysis ability

- AT&M has completed quality inspection and process analysis ability.
- Inspection from materials to final product all by internal Test Center.
- Laboratory consists of physical testing, chemistry analysis, mechanical inspection and all magnets related testing equipment.



Measurement & Instrument

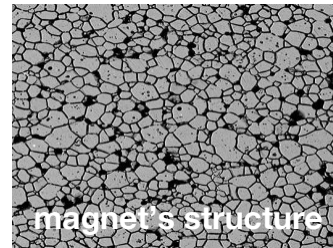
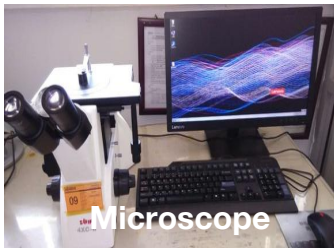
• Dimension



• Magnetic performance



• Microstructure analysis



• Composition analysis



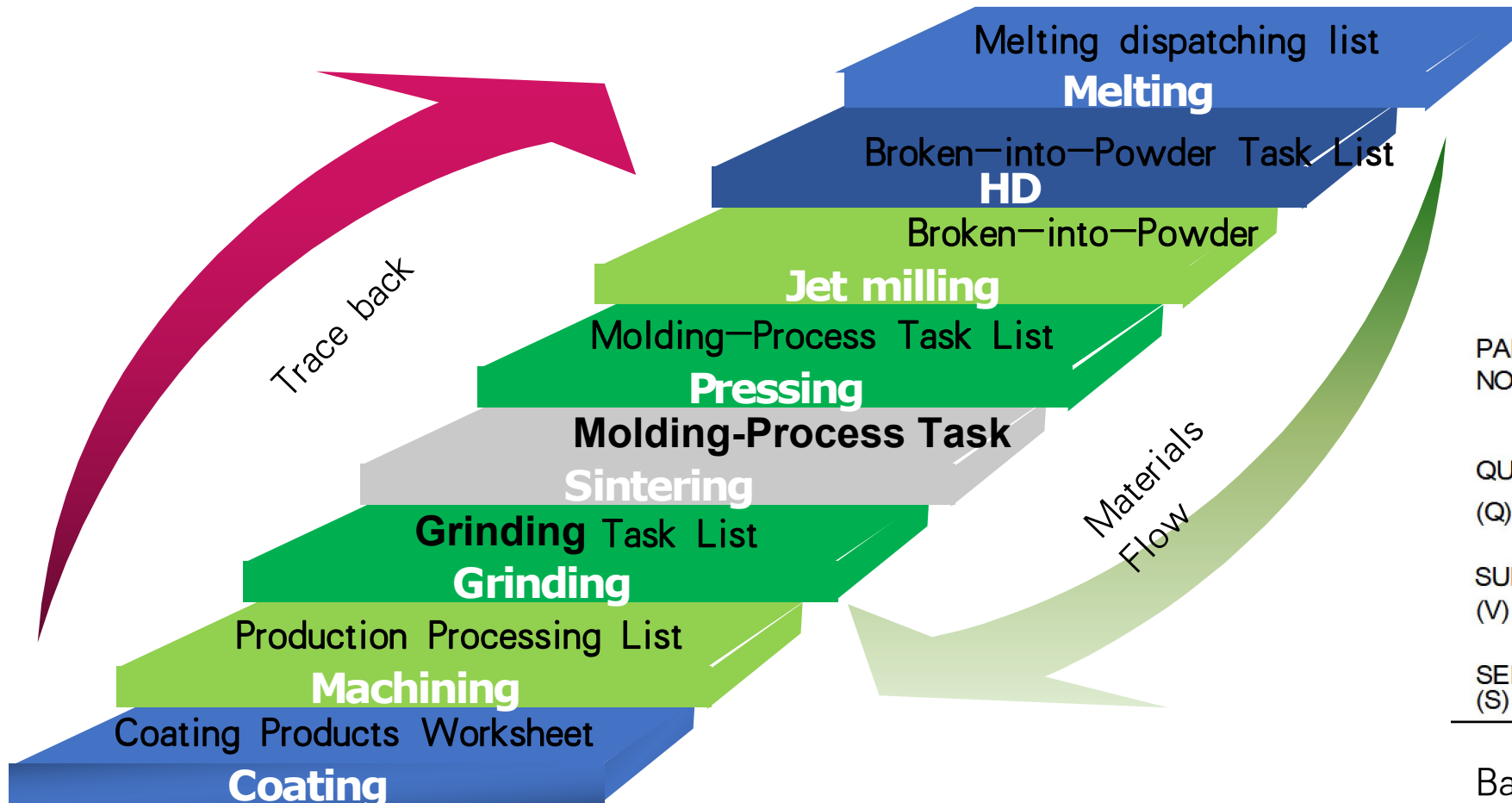
• Reliability measurement



• Appearance & others



Advantage 8 : Traceability for Whole Process



PART NO.(P)	78448101
QUANTITY (Q)	75
SUPPLIER (V)	120126666
SERIAL (S)	EET0359

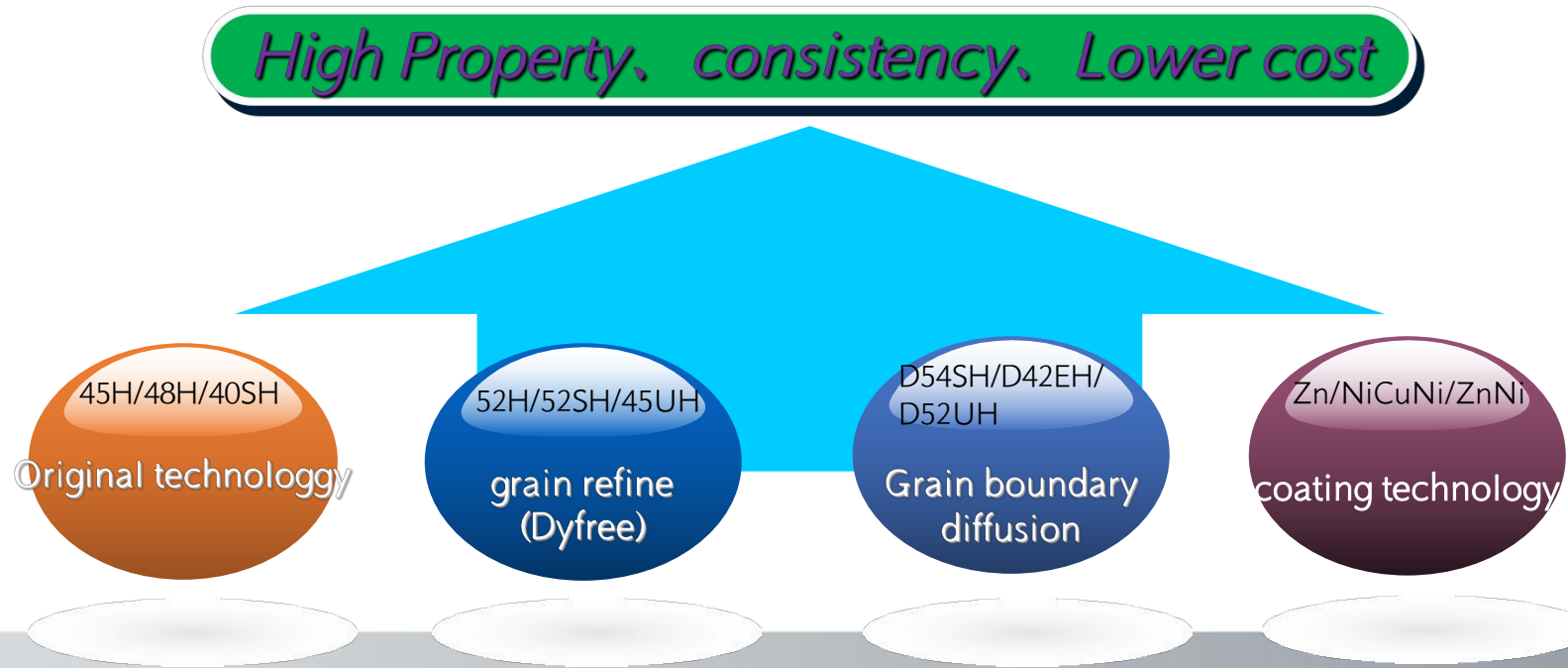


Barcode: code 39 Full ASCII

■ Core Technology & and advantages

- Strong technical R&D ability and material manufacturing process with the support of CISRI;
- Perfect inspection means with a large number of imported and domestic advanced instrument;
- Accumulated rich industrial experience based on several years industrial production;
- The whole rare earth industry chain development, full guarantee of rare earth resources.

Rare earth resources → magnet manufacture → mechanical machining → surface treatment → inspection and packaging.



Many Thanks!

安泰事业 **大家**成就

创新推动科技进步 材料改善人类生活

INNOVATION TO PROMOTE SCIENTIFIC PROGRESS MATERIALS TO IMPROVE HUMAN LIFE